

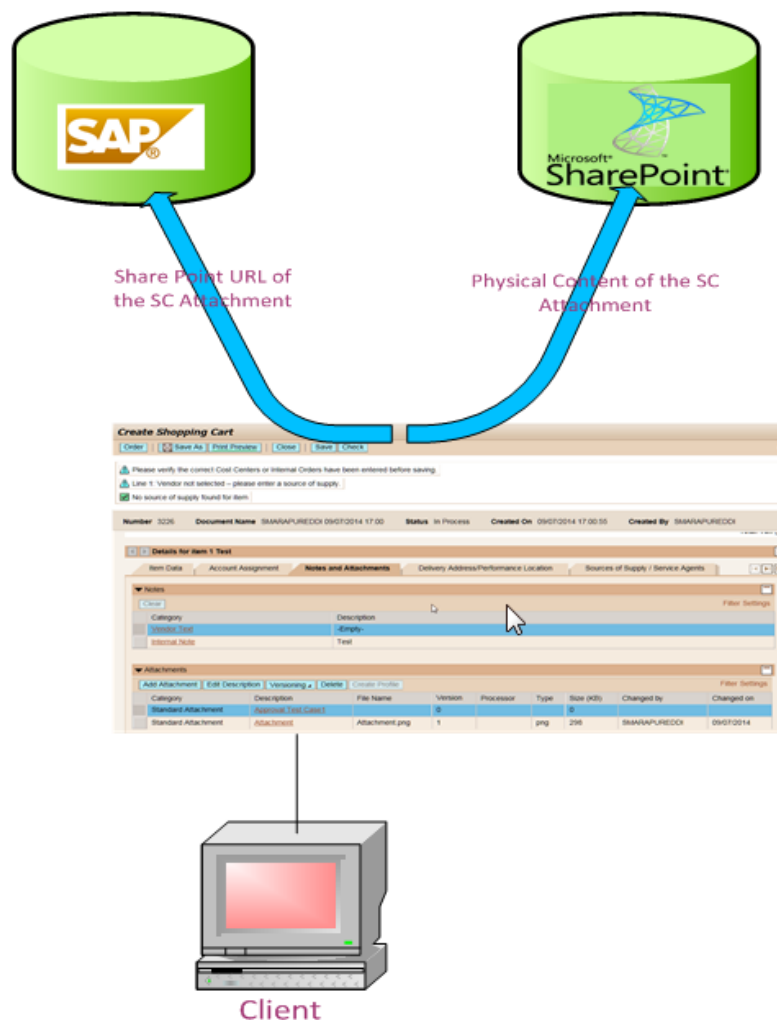
Shopping Cart attachments to SharePoint

Requirement

Shopping cart attachments should be saved in the SharePoint instead of SAP Database/Tables. And also all the operations should be happen normally as usual(Delete, Renaming File name, Adding New attachments,etc).

Development Approach

Here we wanted to store the physical documents in SharePoint and URL of those documents in SAP. So we are using standard framework to perform all the attachment related operations but we are just making that with URL.



Shopping Cart attachments to SharePoint

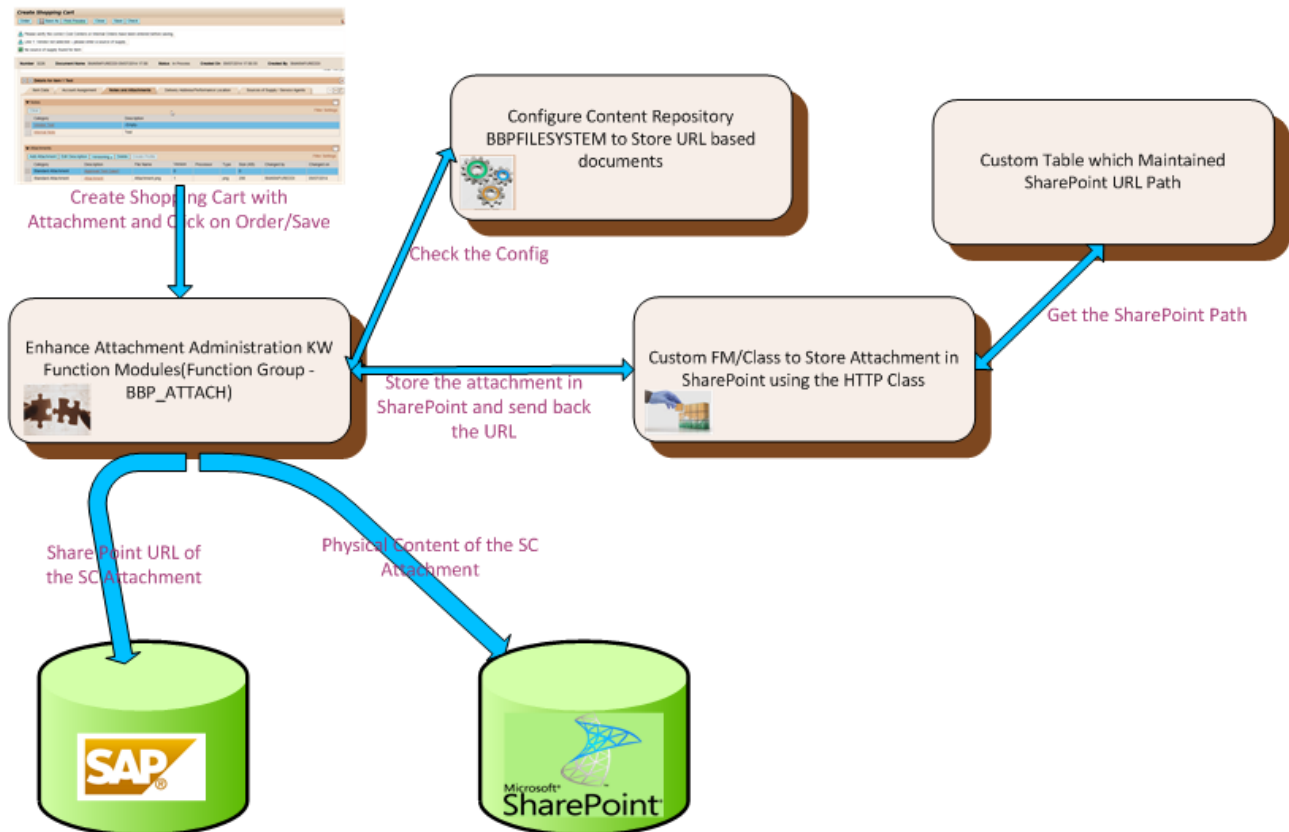
By default all the documents will be stored in SAP Database tables. We have an option to store the attachments as URL based or Normal (Content Based). Content Based will store the attachment physical information in to the SAP tables whereas URL based will store URLs.

Now we changed Content Repository BBPFILESYSTEM as URL based, so SAP system can store URL based attachments. After that we enhanced standard Function Modules that creates, updates, deletes Shopping cart attachments.

We haven't created any custom content server instead we used the standard content repository and framework. We created FM to store the documents in SharePoint using the HTTP classes and store that SharePoint URL in SAP standard framework tables.

Steps

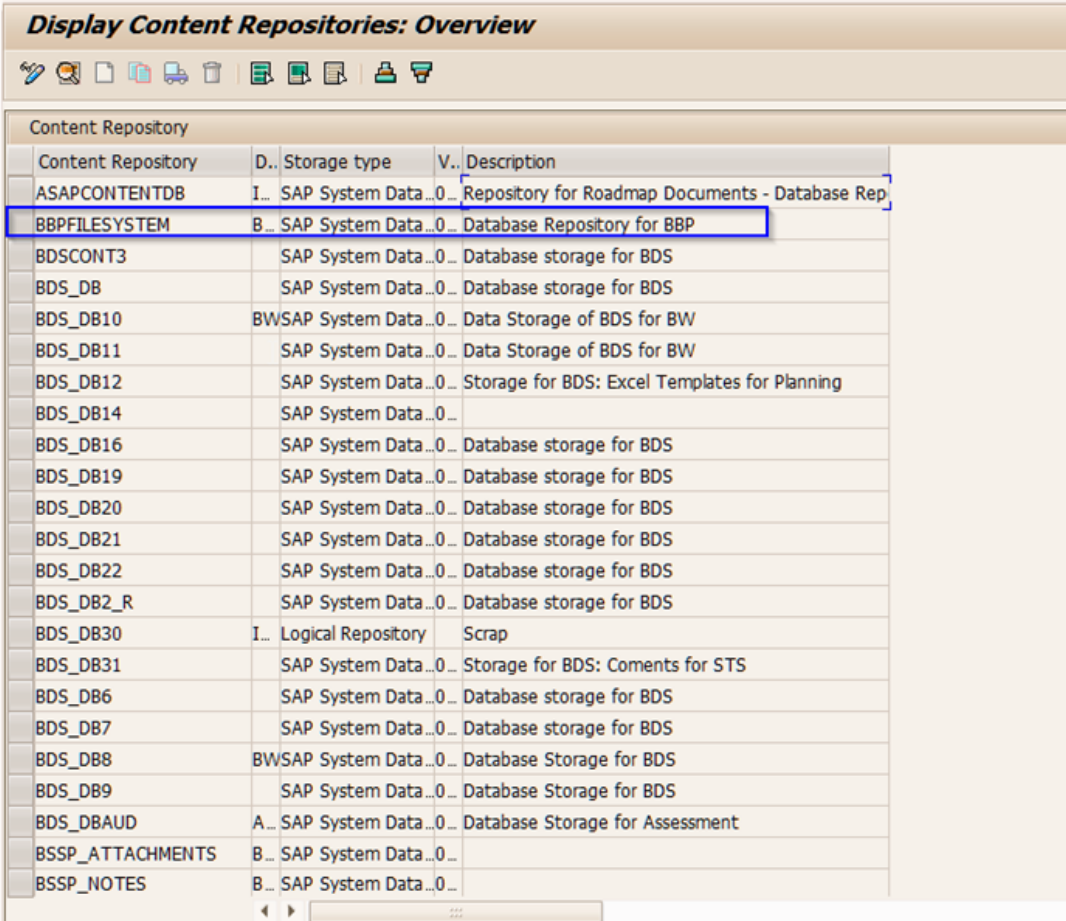
1. Changing the Content Repository BBPFILESYSTEM to store URL based attachments
2. Enhancing the standard create, update, delete API function modules to bypass the documents to SharePoint.
3. Custom Function/Class to store an attachment to SharePoint using the HTTP standard classes.



Development Steps

Changing Content Repository BBPFILESYSTEM

Goto SPRO-> SAP Web Application Server-> Application Server-> Basis Services -> Knowledge Provider-> Content Management Service-> Define Content Repositories
Click on BBPFILESYSTEM



Content Repository	D.	Storage type	V.	Description
ASAPCONTENTDB	I...	SAP System Data...	0...	Repository for Roadmap Documents - Database Rep
BBPFILESYSTEM	B...	SAP System Data...	0...	Database Repository for BBP
BDSCONT3		SAP System Data...	0...	Database storage for BDS
BDS_DB		SAP System Data...	0...	Database storage for BDS
BDS_DB10	BW	SAP System Data...	0...	Data Storage of BDS for BW
BDS_DB11		SAP System Data...	0...	Data Storage of BDS for BW
BDS_DB12		SAP System Data...	0...	Storage for BDS: Excel Templates for Planning
BDS_DB14		SAP System Data...	0...	
BDS_DB16		SAP System Data...	0...	Database storage for BDS
BDS_DB19		SAP System Data...	0...	Database storage for BDS
BDS_DB20		SAP System Data...	0...	Database storage for BDS
BDS_DB21		SAP System Data...	0...	Database storage for BDS
BDS_DB22		SAP System Data...	0...	Database storage for BDS
BDS_DB2_R		SAP System Data...	0...	Database storage for BDS
BDS_DB30	I...	Logical Repository		Scrap
BDS_DB31		SAP System Data...	0...	Storage for BDS: Coments for STS
BDS_DB6		SAP System Data...	0...	Database storage for BDS
BDS_DB7		SAP System Data...	0...	Database storage for BDS
BDS_DB8	BW	SAP System Data...	0...	Database Storage for BDS
BDS_DB9		SAP System Data...	0...	Database Storage for BDS
BDS_DBAUD	A...	SAP System Data...	0...	Database Storage for Assessment
BSSP_ATTACHMENTS	B...	SAP System Data...	0...	
BSSP_NOTES	B...	SAP System Data...	0...	

You will see Rep. Sub-Type as Normal

Shopping Cart attachments to SharePoint

Display Content Repositories: Detail

Simple admin. Full administration

Content Rep. Active 7 / 130

Description

Document Area

Storage type

Rep. Sub-Type

Version no. Content Server version 4.6

Contents table

Phys. path

Time created 30.05.01 11:23:25

Created by

Last Changed At 30.05.01 11:23:25

Last changed by

Change Rep. Sub-Type to URL based

Display Content Repositories: Detail

Simple admin. Full administration

Content Rep. Active 2 / 86

Description

Document Area

Storage type

Rep. Sub-Type

Version no. Content Server version 4.6

Contents table

Phys. path

Time created 05/30/01 12:23:25

Created by

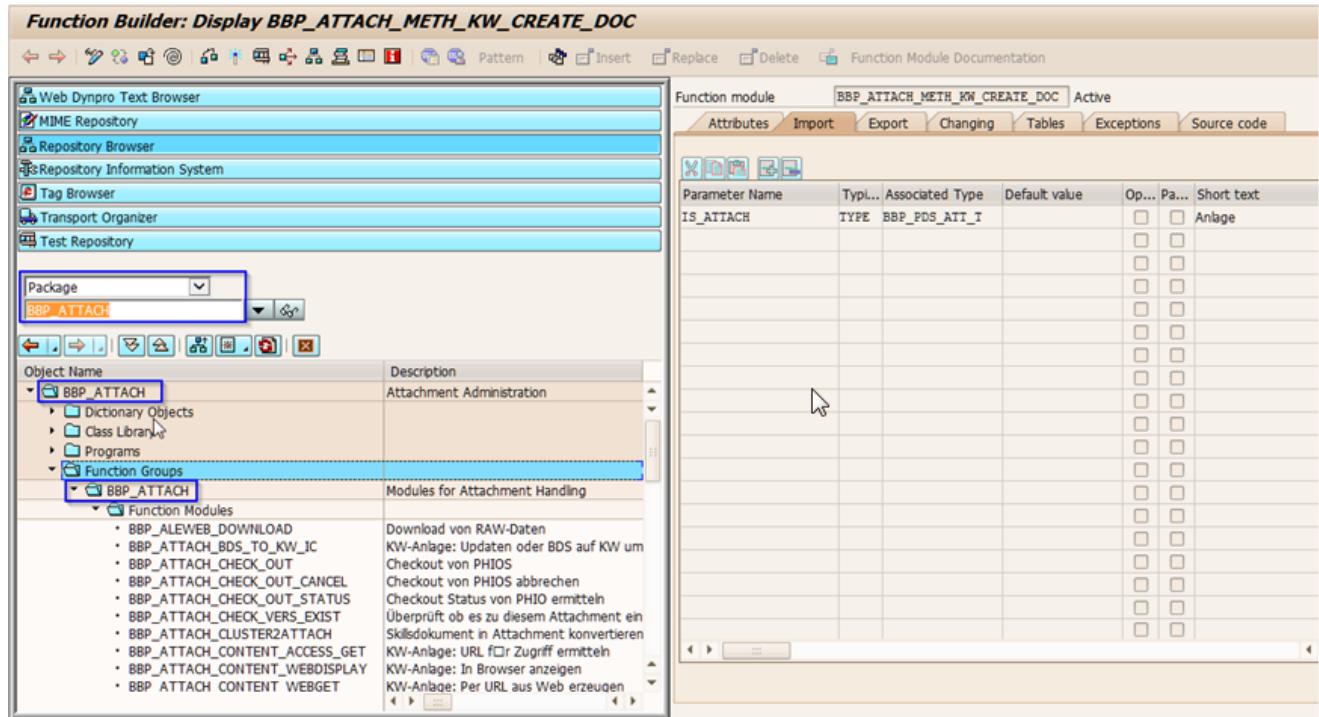
Last Changed At 08/25/14 14:15:20

Last changed by

Name

Enhancing Standard APIs

We have to find APIs which are creating, updating, Delete attachments, etc. The Package BBP_ATTACH has all the attachments related objects and function group BBP_ATTACH has API function modules that actually trigger while creating, updating, and deleting.



Based on your requirement you can enhance those FMs. Here we created an implicit enhancement at starting to these FMs

Create FM - BBP_ATTACH_METH_KW_CREATE_DOC

This function module creates an attachment for SRM documents. we have to enhance this and make the attachments to store in SharePoint.

ENHANCEMENT 1 ZZ_AP_ATTACHMENTS_SHAREPOINT. *"active version"*

* Purpose : Route the Attachment Storing to SharePoint and Store URL only in SAP.

* Date : 8/27/2014

* User : SMARAPUREDDI

* Transport: SRDK900966 SMARAPUREDDI AP Enhancement - Storing Enhancements in SharePoint

* Declarations

Shopping Cart attachments to SharePoint

DATA:

```
ls_skwfid_en      TYPE skwf_objid,  
ls_loio_en        TYPE skwf_io,  
ls_phio_en        TYPE skwf_io,  
lt_phio_prop_en   TYPE TABLE OF sdokpropty,  
lt_loio_prop_en   TYPE TABLE OF sdokpropty,  
ls_prop_en        TYPE sdokpropty,  
ls_error_en       TYPE skwf_error,  
ls_file_access_info_en TYPE sdokfilaci,  
lt_file_access_info_en TYPE TABLE OF sdokfilaci.
```

** The INSERT & REPLACE blocks are the updated logic for Standard*

**{ INSERT*

DATA:

```
lv_url            TYPE so_url,  
ls_file_access_url TYPE sdokcompru,  
lt_file_access_url TYPE TABLE OF sdokcompru,  
lv_send           TYPE c.  
*} INSERT
```

** exporting = importing plus KW-fields*

es_attach = is_attach.

ls_skwfid_en = is_attach-guid.

** perpare properties of the attachments*

ls_prop_en-name = bbpoa_pn_desc.

ls_prop_en-value = is_attach-description.

APPEND ls_prop_en TO lt_loio_prop_en.

ls_prop_en-name = bbpoa_pn_relurl.

Shopping Cart attachments to SharePoint

ls_prop_en-value = is_attach-phio_fname.

APPEND ls_prop_en TO lt_loio_prop_en.

lt_phio_prop_en[] = lt_loio_prop_en[].

ls_prop_en-name = bbpoa_pn_langu.

ls_prop_en-value = sy-langu.

APPEND ls_prop_en TO lt_phio_prop_en.

ls_prop_en-name = bbpoa_pn_mime.

ls_prop_en-value = is_attach-phio_mime.

APPEND ls_prop_en TO lt_phio_prop_en.

ls_prop_en-name = bbpoa_pn_ver_no.

ls_prop_en-value = is_attach-phio_version_no.

APPEND ls_prop_en TO lt_phio_prop_en.

** create logical and physical objects*

CALL FUNCTION 'SKWF_LOIO_WITH_PHIO_CREATE'

EXPORTING

loio_class = bbpoa_loioclass

phio_class = bbpoa_phioclass

loio_unique_id = ls_skwfid_en

phio_unique_id = ls_skwfid_en

IMPORTING

loio = ls_loio_en

phio = ls_phio_en

error = ls_error_en

TABLES

loio_properties = lt_loio_prop_en

phio_properties = lt_phio_prop_en.

IF NOT ls_error_en IS INITIAL.

PERFORM kw_error_messages TABLES et_messages

USING ls_error_en.

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EXIT.

ENDIF.

** Store the physical attachment in SharePoint of corresponding folder(Dev,QA,PRD)*

**{ INSERT*

DATA: lv_error type sy-subrc,

lv_error_text type string.

CALL FUNCTION 'Z_SEND_ATTACHMENT'

EXPORTING

IS_ATTACH = is_attach

IV_LOIO = ls_loio_en-objid

IMPORTING

EV_URL = lv_url

EV_ERROR = lv_error

EV_ERROR_TEXT = lv_error_text

EXCEPTIONS

NO_OBJEC_TYPE = 1

NO_SHAREPOINT_DIRECTORY = 2

OTHERS = 3.

IF LV_ERROR > 2.

ls_error_en-type = 'E'.

ls_error_en-id = 'BBP_ATT'.

ls_error_en-no = '004'.

ls_error_en-v1 = 'ERROR: Unable to upload document to sharepoint.'.

ls_error_en-v2 = ''.

ls_error_en-v3 = lv_error_text.

PERFORM kw_error_messages TABLES et_messages

USING ls_error_en.

EXIT.

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ENDIF.

" Send to sharepoint.

if lv_error = 0.

lv_send = 'X'.

" Clear the object type info.

clear es_attach-PHIO_CHECKOUT_USER.

endif.

**} INSERT*

** Store URL instaed of physica attachment in SAP*

**{ REPLACE*

**\ ls_file_access_info-file_name = is_attach-phio_fname.*

**\ ls_file_access_info-property = bbpoa_bbp_appl.*

**\ ls_file_access_info-mimetype = is_attach-phio_mime.*

**\ ls_file_access_info-binary_flg = c_on.*

**\ ls_file_access_info-file_size = is_attach-phio_fsize.*

ls_file_access_url-file_name = is_attach-phio_fname.

ls_file_access_url-property = bbpoa_bbp_appl.

ls_file_access_url-mimetype = is_attach-phio_mime.

ls_file_access_url-file_size = is_attach-phio_fsize.

if lv_send is initial.

ls_file_access_info_en-binary_flg = c_on.

else.

ls_file_access_url-file_type = 'B'.

ls_file_access_url-uri = lv_url.

endif.

**} REPLACE*

**{ REPLACE*

**\ APPEND ls_file_access_info TO lt_file_access_info.*

if lv_send is initial.

Shopping Cart attachments to SharePoint

APPEND ls_file_access_info_en TO lt_file_access_info_en.

else.

APPEND ls_file_access_url TO lt_file_access_url.

endif.

**} REPLACE*

if lv_send is initial.

** store attachmentcontent with content*

CALL FUNCTION 'SKWF_PHIO_STORE_CONTENT'

EXPORTING

phio = ls_phio_en

x_raw_mode = c_on

IMPORTING

error = ls_error_en

TABLES

file_access_info = lt_file_access_info_en

file_content_binary = is_attach-phio_content.

else.

** store attachmentcontent with URL*

CALL FUNCTION 'SKWF_PHIO_STORE_CONTENT'

EXPORTING

phio = ls_phio_en

x_raw_mode = c_on

IMPORTING

error = ls_error_en

TABLES

**{ REPLACE*

**| file_access_info = lt_file_access_info*

file_access_url = lt_file_access_url

**} REPLACE*

file_content_binary = is_attach-phio_content.

endif.

```
IF NOT ls_error_en IS INITIAL.  
  PERFORM kw_error_messages TABLES et_messages  
  USING ls_error_en.  
EXIT.  
ENDIF.
```

```
es_attach-loio_class  = ls_loio_en-class.  
es_attach-loio_objid  = ls_loio_en-objid.  
  
*{ INSERT  
*  
if lv_send is initial.  
  es_attach-loio_class  = ls_loio_en-class.  
  es_attach-loio_objid  = ls_loio_en-objid.  
else.  
  es_attach-url = lv_url.  
  es_attach-type = c_att_type_url.  
endif.  
*} INSERT  
  
* Return  
return.
```

ENDENHANCEMENT.

Change FM - BBP_ATTACH_METH_KW_UPDATE_DOC

In the same way you have to make the logic to update the document and store that in SharePoint.

Version FM - BBP_ATTACH_LOIO_GET_VERSIONS

Code for these FMs are attached.. Basically we are routing the documents to SharePoint and Storing the URL in SAP.

Include LBBP_ATTACHF03

You have to restrict an error message logging here

```
*{ REPLACE      SRDK900254                                1
*\ IF NOT Is_error IS INITIAL.
IF NOT Is_error IS INITIAL AND
NOT ( Is_error-id = 'SKWF_SDOKERRS' AND Is_error-no = 33 ).
*} REPLACE
PERFORM kw_error_messages TABLES pt_messages
USING Is_error.
EXIT.
ENDIF.
```

Custom FM for storing attachments in SharePoint

We enhanced standard framework to store attachments URL and store physical attachments in SharePoint using custom FM 'Z_SEND_ATTACHMENT'.

```
FUNCTION z_send_attachment.
*"_-----
*""Local Interface:
*  IMPORTING
*    REFERENCE(IS_ATTACH) TYPE BBP_PDS_ATT_T
*    REFERENCE(IV_LOIO) TYPE SDOK_DOCID OPTIONAL
*  EXPORTING
*    REFERENCE(EV_URL) TYPE SO_URL
*    REFERENCE(EV_ERROR) TYPE SY-SUBRC
*    REFERENCE(EV_ERROR_TEXT) TYPE STRING
*  EXCEPTIONS
*    NO_OBJECT_TYPE
*    NO_SHAREPOINT_DIRECTORY
*"_-----
DATA: ls_obj_attachment TYPE zobj_attachments,
```

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```
lv_object_type TYPE crmt_subobject_category_db,  
data TYPE xstring,  
length TYPE i,  
server_name TYPE string,  
server_port TYPE string,  
auth_server_name TYPE string,  
auth_server_port TYPE string,  
lv_filename TYPE string,  
lv_attachment_time(15) TYPE n,  
lv_attachment_version TYPE bds_dverno,  
lv_loio TYPE sdok_docid,  
lv_file_ext TYPE string,  
lv_url TYPE string,  
lv_tmp TYPE service_rl,  
ret TYPE string.
```

```
DATA: client TYPE REF TO if_http_client.
```

```
" Get the object attachment configuration.
```

```
SELECT SINGLE *
```

```
FROM zobj_attachments
```

```
INTO ls_obj_attachment.
```

```
* WHERE name = lv_object_type.
```

```
" Not found?
```

```
IF ls_obj_attachment IS INITIAL OR ls_obj_attachment-send_external <> 'X'.
```

```
RAISE no_sharepoint_directory.
```

```
* message 'ERROR: Unable to upload document to sharepoint due to configuration error.' type 'E'.
```

```
ENDIF.
```

```
* Convert to string.
```

```
length = is_attach-phio_fsize.
```

```
CALL FUNCTION 'SCMS_BINARY_TO_XSTRING'
```

```
EXPORTING
```

Shopping Cart attachments to SharePoint

```
input_length = length
IMPORTING
buffer      = data
TABLES
binary_tab  = is_attach-phio_content
EXCEPTIONS
OTHERS      = 1.

" Error?
IF sy-subrc <> 0.
ev_error = sy-subrc.
MESSAGE ID sy-msgid TYPE 'E' NUMBER sy-msgno
WITH sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4 INTO ev_error_text.
RETURN.
ENDIF.

" Set the external server information.
server_name = ls_obj_attachment-server_name.
server_port = ls_obj_attachment-server_port.
auth_server_name = ls_obj_attachment-auth_server_name.
auth_server_port = ls_obj_attachment-auth_server_port.
CALL METHOD cl_http_client=>create
EXPORTING
proxy_host  = auth_server_name
proxy_service = auth_server_port
host        = server_name
service      = server_port
scheme      = 1
IMPORTING
client      = client
EXCEPTIONS
OTHERS      = 1.
```

" Error?

IF sy-subrc <> 0.

ev_error = sy-subrc.

MESSAGE ID sy-msgid TYPE 'E' NUMBER sy-msgno

WITH sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4 INTO ev_error_text.

RETURN.

ENDIF.

" Get the file extension, if any.

CALL FUNCTION 'BBP_OUTPUT_X_PATH_FILE_EXT'

EXPORTING

i_pathfile = is_attach-phio_fname

IMPORTING

e_file_pure = lv_filename

e_extens = lv_file_ext

EXCEPTIONS

OTHERS = 1.

CONDENSE lv_filename NO-GAPS.

CONDENSE lv_file_ext NO-GAPS.

REPLACE ALL OCCURRENCES OF '#' IN lv_filename WITH '_'.

REPLACE ALL OCCURRENCES OF '?' IN lv_filename WITH '_'.

REPLACE ALL OCCURRENCES OF '&' IN lv_filename WITH '_'.

REPLACE ALL OCCURRENCES OF '%' IN lv_filename WITH '_'.

REPLACE ALL OCCURRENCES OF '/' IN lv_filename WITH '_'.

REPLACE ALL OCCURRENCES OF '#' IN lv_file_ext WITH '_'.

REPLACE ALL OCCURRENCES OF '?' IN lv_file_ext WITH '_'.

REPLACE ALL OCCURRENCES OF '&' IN lv_file_ext WITH '_'.

REPLACE ALL OCCURRENCES OF '%' IN lv_file_ext WITH '_'.

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REPLACE ALL OCCURRENCES OF '/' IN lv_file_ext WITH '_'.

" Set the version number.

CALL FUNCTION 'CONVERSION_EXIT_ALPHA_OUTPUT'

EXPORTING

input = is_attach-phio_version_no

IMPORTING

output = lv_attachment_version.

" Set the URL.

lv_attachment_time = is_attach-creationtime.

IF NOT is_attach-loio_objid IS INITIAL.

lv_loio = is_attach-loio_objid.

ELSE.

lv_loio = iv_loio.

ENDIF.

IF lv_file_ext IS INITIAL.

" concatenate ls_obj_attachment-folder_name '/' lv_filename '_' sy-uname '_' lv_attachment_time into lv_url.

CONCATENATE ls_obj_attachment-folder_name '/' lv_filename '_' sy-uname '_V' lv_attachment_version '_'
lv_loio INTO lv_url.

ELSE.

*" concatenate ls_obj_attachment-folder_name '/' lv_filename '_' sy-uname '_' lv_attachment_time '
lv_file_ext into lv_url.*

CONCATENATE ls_obj_attachment-folder_name '/' lv_filename '_' sy-uname '_V' lv_attachment_version '_'
lv_loio '.' lv_file_ext INTO lv_url.

ENDIF.

CALL METHOD cl_http_utility=>set_request_uri

EXPORTING

request = client->request

uri = lv_url

EXCEPTIONS

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OTHERS = 1.

" Error?

IF sy-subrc <> 0.

ev_error = sy-subrc.

MESSAGE ID sy-msgid TYPE 'E' NUMBER sy-msgno

WITH sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4 INTO ev_error_text.

RETURN.

ENDIF.

CALL METHOD client->request->set_method

EXPORTING

method = 'PUT'.

CALL METHOD client->request->set_data

EXPORTING

data = data.

CALL METHOD client->send

EXCEPTIONS

OTHERS = 1.

" Error?

IF sy-subrc <> 0.

ev_error = sy-subrc.

MESSAGE ID sy-msgid TYPE 'E' NUMBER sy-msgno

WITH sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4 INTO ev_error_text.

RETURN.

ENDIF.

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CALL METHOD client->receive

EXCEPTIONS

OTHERS = 1.

" Error?

IF sy-subrc <> 0.

ev_error = sy-subrc.

MESSAGE ID sy-msgid TYPE 'E' NUMBER sy-msgno

WITH sy-msgv1 sy-msgv2 sy-msgv3 sy-msgv4 INTO ev_error_text.

RETURN.

ENDIF.

ret = client->response->get_cdata().

" Error?

IF ret IS NOT INITIAL.

MESSAGE 'ERROR: Unable to upload document to sharepoint.' TYPE 'E'.

ENDIF.

CALL METHOD client->close.

CONCATENATE 'http://'

ls_obj_attachment-server_name

lv_url

INTO ev_url.

RETURN.

ENDFUNCTION.

Custom table zobj_attachments

This custom table will have the SharePoint URL folder path info based on the document type

Dictionary: Display Table

Transp. Table OBJ_ATTACHMENTS Active

Short Description Business object attachment related configuration

Attributes Delivery and Maintenance Fields Entry help/check Currency/Quantity Fields

Field	Key	Ini...	Data element	Data Type	Length	Deci...	Short Description
<u>MANDT</u>	☒	☒	MANDT	CLNT	3	0	Client
<u>NAME</u>	☒	☒	OJ_NAME	CHAR	10	0	Object type
<u>SEND_EXTERNAL</u>	☐	☐	FLAG	CHAR	1	0	General Flag
<u>SERVER_NAME</u>	☐	☐	RFCHOST	CHAR	100	0	Name of target host
<u>SERVER_PORT</u>	☐	☐	MSSERV	CHAR	20	0	Service
<u>AUTH_SERVER_NAME</u>	☐	☐	MSHOST	CHAR	20	0	Host
<u>AUTH_SERVER_PORT</u>	☐	☐	MSSERV	CHAR	20	0	Service
<u>FOLDER_NAME</u>	☐	☐	SRETDOCURL	CHAR	255	0	URL of documents